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Our Colleagues in Suicide Prevention,

We are pleased to share this special report, "Suicide in Orange County: A Closer Look", with you.

The first report on injury-related deaths and hospitalizations in Orange County released by HCA in November 1999, noted that suicide was the number one cause of injury-related death in Orange County during the baseline year of 1996. Data from 1997 and 1998 also reveal that suicide remains the leading cause of injury-related death.

This report provides a closer review of suicide death in Orange County. It compares Orange County's suicide rates with those of California and the United States. The paper then looks at the populations most affected by suicide death. The results of a literature review contrasting risk and protective factors is also included to provide important clues to increase the effectiveness of suicide prevention efforts.

Thank you for your interest. We encourage you to share this special report with other interested colleagues. The report can also be found at the Chronic Disease and Injury Prevention website: http://www.oc.ca.gov/hca/public/cdip/publications.htm .

Sincerely,

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Suicide in Orange County: A Closer Look

November 2000

Based on 1997 Death Data

Chronic Disease and Injury Prevention Program (CDIP)
County of Orange Health Care Agency

Suicide in Orange County

Based on 1997 Death Data

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In 1999 the United States' Surgeon General urged Americans to recognize the significant public health problem of suicide in "The Surgeon General's Call to Action to Prevent Suicide." Dr. Satcher urged public health and mental health leaders to work collaboratively to strengthen programs and research geared toward suicide prevention.

The suicide problem in Orange County mirrors the nationwide predicament. Suicide was the leading cause of injury-related death in Orange County during 1997. The following paper provides an overview of suicide in Orange County.

The objective for publishing this paper is to share suicide death data and information on risk and protective factors as well as community assets so that together we can establish priorities for enhancing existing services and developing new services. It is our hope that this paper will generate further interest in suicide prevention in our community.

November 2000

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What Does the Data Show Us About Suicide?

This report constitutes a study of suicide mortality in Orange County for Orange County residents. Orange County death records for 1990-1997 comprise the suicide data.

- Suicide was the **8th leading cause of all deaths** for Orange County residents in 1997, accounting for 1.5% of all deaths. For males, suicide represented 2.3% of all deaths, and for females, suicide accounted for 0.8% of all deaths.

Leading Underlying Causes of Death for Orange County Residents, 1997

Rank	Cause of Death	Number	Percent
1	Diseases of heart	5,157	32.3%
2	Malignant neoplasms	3,852	24.1%
3	Cerebrovascular diseases	1,146	7.2%
4	Pneumonia and Influenza	896	5.6%
5	Chronic obstructive pulmonary disease	855	5.4%
6	Accidents and adverse effects	598	3.7%
7	Diabetes mellitus	328	2.1%
8	**Suicide**	**235**	**1.5%**
9	Chronic liver disease and cirrhosis	234	1.5%
10	Atherosclerosis	204	1.3%
11	Alzheimers disease	186	1.2%
	All others	**2,270**	**14.2%**
	Total	**15,961**	**100.0%**

County of Orange, Health Care Agency, 1997 Death File

- When 1997 deaths due to injury were analyzed, suicide emerged as a major underlying cause of death. Suicide was the **leading cause of injury-related deaths** during 1997. During 1997, the suicide crude death rate was 8.8 per 100,000 person-years.

Injury-Related Deaths for Orange County Residents, 1997

Cause of Death - Injuries	Number	Percent
Suicide	**235**	**24.4%**
Motor Vehicle Traffic	222	23.1%
Poisoning-unintentional	143	14.8%
Homicide	112	11.6%
Fall	104	10.8%
Drowning/Submersion	28	2.9%
Suffocation-unintentional	28	2.9%
Undetermined Intent	26	2.7%
Transport,other	19	2.0%
Late Effects	8	0.8%
Fire/Flames-unintentional	7	0.7%
Pedestrian,other	7	0.7%
Unintentional,other	6	0.6%
Legal Intervention/War	6	0.6%
Machinery in Operation	4	0.4%
Natural/Environmental	4	0.4%
Struck by Object-unintentional	2	0.2%
Firearms-unintentional	1	0.1%
Overexertion	1	0.1%
Total	**963**	**100.0%**

County of Orange, Health Care Agency, 1997 Death File

- The suicide death rate in Orange County appears to be declining. Trends indicate an average annual decline of 3.5% from 1990 to 1997.

How Does Orange County Compare with California and the United States?

- During 1997, Orange County had a suicide death rate that was **lower than both California and the United States**. Orange County had a suicide death rate of 8.8 per 100,000 population as compared to California (9.6 per 100,000) and the United States (10.6 per 100,000).

- **Orange County has attained the *Healthy People 2000* objective rate** for suicide of 10.5 per 100,000 population. In addition, Orange County has achieved the target rates for two special at-risk groups defined by *Healthy People 2000*: adolescents 15-19 and males 20-34. **The target rate for a third at-risk group, white males 65 and older, has not been met.**

- The target set for *Healthy People 2010* is 6.0 total suicides per 100,000. Orange County has not met this target yet.

Orange County Death Rate Comparisons with *Healthy People* Target Rates, 1995-1997

Suicide (per 100,000)	2000 Target	Orange County 1995-1997	2010 Target
Adolescents 15-19	**8.2**	**6.4**	
Males 20-34	**21.4**	**18.1**	
White Males 65 and older	**39.2**	**40.3**	
Total Suicides	**10.5**	**8.8**	**6.0**

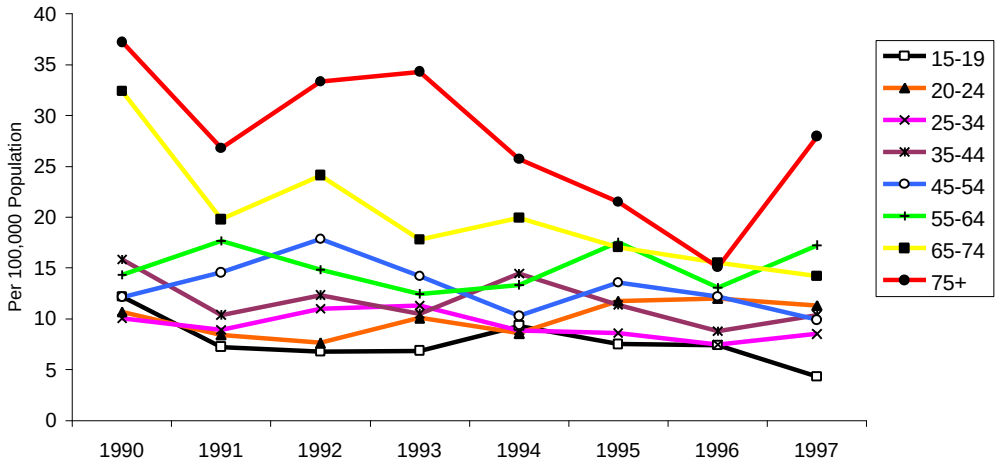
County of Orange, Health Care Agency, 1995-1997 Death Files

Who Is Affected by Suicide?

Age

- With the exception of 1996, the **75 and older age group continuously had the highest death rate** due to suicide from 1990-1997.

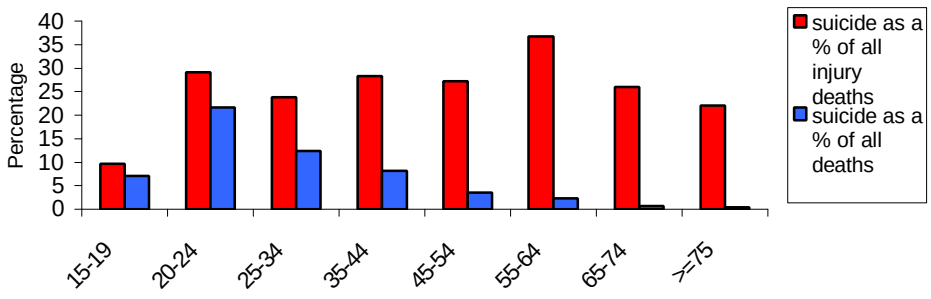
Death Rates per 100,000 Population for Suicide among Orange County Residents by Age, 1990-1997



County of Orange, Health Care Agency, 1990-1997 Death Files
The Center for Demographic Research, California State University, Fullerton

- When suicide death as a percentage of all deaths for every age group was analyzed, the **20-24 year olds** emerged as the group with the **greatest proportion of death due to suicide.** For all injury-related deaths, suicide accounted for a higher percentage in the 55-64 age group as compared to all other groups.

Suicide as a Percentage of All Deaths and Suicide as a Percentage of Injury-Related Deaths for Orange County Residents by Age, 1997



County of Orange, Health Care Agency, 1997 Death File

- When causes of injury death were analyzed for different age groups **suicide emerged as the leading cause of injury death for the 20-24 and 55-64** age groups.

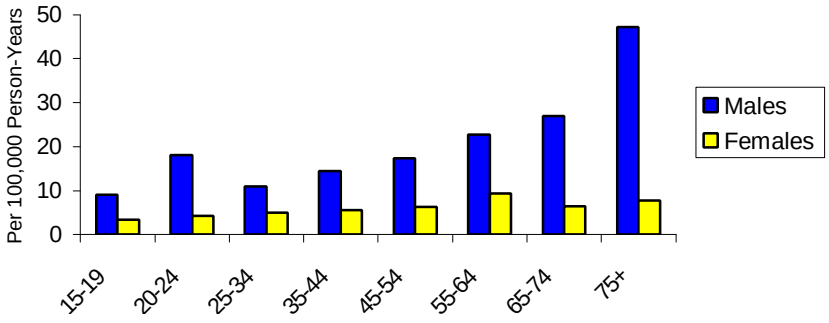
- When leading causes of all deaths were evaluated, based on the Centers for Disease Control's list of leading causes of death, suicide was the 3 rd leading cause of death in the 15-34 age group. Suicide ranked higher in this age group than in all other age groups.

Gender

- Males had a much higher suicide death rate than females. Males had a 2.8 times higher risk for suicide as compared to females.

- Overwhelmingly, the highest death rate from suicide for males in Orange County was in the 75 and older age group. For females, the highest suicide death rate occurred in the 55-64 population.

Suicide Death Rates per 100,000 Person-Years for Orange County Residents by Age and Gender, 1995-1997

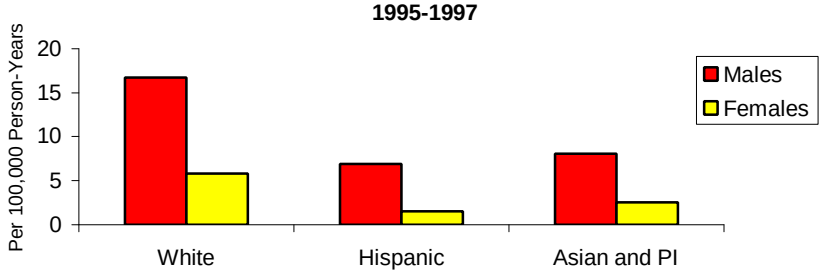


County of Orange, Health Care Agency, 1995-1997 Death Files
The Center for Demographic Research, California State University, Fullerton

Race/Ethnicity

- During 1995-1997, age-adjusted suicide death rates were significantly higher for white males compared to other races. Age-adjusted suicide death rates were also higher for white females than for females of other races.

Suicide Death Rates Per 100,000 Person-Years for Orange County Residents by Race and Gender, 1995-1997



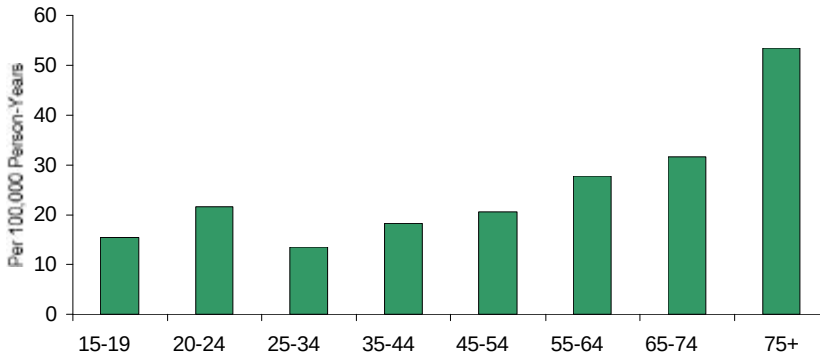
County of Orange, Health Care Agency, 1995-1997 Death Files
The Center for Demographic Research, California State University, Fullerton

Which Group Has the Highest Rate?

When comparing suicide death rates for age, gender, and race/ethnicity, white males emerged as the group with the highest suicide death rate during 1995-1997.

- **White males accounted for 79% of male suicides and for 58% of all suicides in Orange County**.

Suicide Death Rates per 100,000 Person-Years for White Male Orange County Residents by Age, 1995-1997



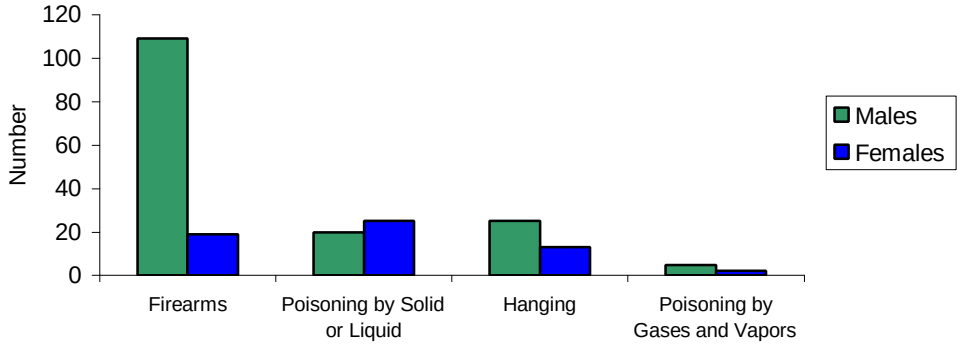
County of Orange, Health Care Agency, 1995-1997 Death Files
The Center for Demographic Research, California State University, Fullerton

- With the exception of 1996, **white males in the 75 and older age group exhibited the highest rates of death** due to suicide between 1990 and 1997.

Which Methods are Used?

- Firearms were used for over half of all suicides. For males, firearms were the most common method used in suicides. For females, poisoning by solid or liquid substances was the most common method chosen.

Method of Suicide for Orange County Males and Females, 1997



County of Orange, Health Care Agency, 1995-1997 Death Files

What Are the Costs of Suicide?

Suicide is costly not only to the victim but also to his/her family, friends, and the community. The burden is emotional as well as economic. Economic costs can be divided into direct and indirect costs.

- Direct costs related to suicide mortality may include medical costs, coroner expenses, funeral costs, emergency room, and nursing home costs. According to the National Public Services Research Institute, the average direct cost of a suicide death in Orange County during 1996 was $6,249.

- Indirect costs are defined as those costs which, although not attributable to the core health problem, are attributable to the problem (Health Canada, 1997) . For methodological and ethical reasons, quantification of indirect costs is controversial. Indirect costs related to suicide mortality are primarily the value of economic productivity lost due to premature death. The average indirect economic cost (production loss only) for a suicide death in Orange County during 1996 was $787,412.

What Are the Risk Factors for Suicide?

Before outlining the major risk factors for suicide, it is important to realize that many people may possess one of more of these risk factors yet never become suicidal. Suicide is a perplexing behavior. Some studies indicate that an interaction of risk factors causes a person to become suicidal. Overall, most research demonstrates that the majority of people who complete suicide have an affective (mood) disorder, a substance abuse disorder or both.

Psychological

- **Psychiatric illness** has emerged as the **strongest risk factor** for suicide in all age groups. Several studies have confirmed that over 90% of adults who commit suicide had an associated psychiatric illness. Of the 90%, 60-80% suffered from an affective (mood) disorder such as major depression (Blumenthal, 1988). Figures are similar for teens.

- In addition to affective disorder, studies have revealed **substance abuse** as a common psychiatric risk factor for suicide. Indeed, one study concluded that for adults, alcohol abuse followed major depression as the top suicide risk factor.

- **Certain personality traits** such as low self-esteem, impulsiveness, hopelessness, negativity, aggression and distrust have been determined to be risk factors for suicide in all age groups.

Sociocultural/Environmental

- Findings indicate a link between declining social support systems and suicidal behaviors.

- A recent **negative life event**, such as bereavement, separation, divorce, or unemployment can also predispose an individual to complete suicide. A certain amount of **life stress** over a period of years has also been considered to be a risk factor for suicide.

- **Exposure to suicidal behavior** has been known to be a highly significant risk factor for suicide. This process, known as “suicide contagion”, occurs when knowledge of a suicide influences subsequent suicides (National Institute of Mental Health, 1994).

Situational

- The strongest situational risk factor for completed suicide is the **presence of a firearm** in the home. This risk factor is more salient for males than for females. The greater frequency of firearm use for men has been attributed to ease of access, greater intent to commit suicide, and to socialization and familiarity with firearms (Canetto, 1992).

What Are the Protective Factors for Suicide?

Although many people have experienced negative life events and life stress, they do not turn to suicide as a means of coping. Protective factors provide a buffer that prevents people from committing suicide. Those individuals who do not choose suicide under stress do so because they have acquired social support and coping mechanisms that assist them during a difficult time.

- Protective factors can be discussed as two types : social resources and personal resources. Social resources include strong relationships with family and friends. Personal resources include high self esteem, strong decision making skills and coping behaviors, cognitive flexibility, hopefulness, and a sense of personal control.

What Is Currently Being Done about Suicide in Orange County?

Initial assessment of local community resources indicates that there are programs in Orange County that directly address suicide prevention. These types of resources include

- Screening and identification programs
- Services that address suicide directly
- Firearms violence prevention groups

There are also interventions that indirectly target risk factors for suicide through their programs. Because of the difficulty of screening populations for suicide risk and because of the strong impact of risk factors for suicide, these prevention programs can indirectly benefit, and perhaps help identify those high-risk individuals. There are others that target protective factors for suicide, as well, which help reduce the likelihood that a person would choose suicide as a method of coping. These programs include:

- Bereavement Support Groups
- Single Adult Groups
- Community Clinics
- Drug and Alcohol Use Prevention Programs
- Mental Health/Depression Services
- Senior Services
- Support Groups
- Violence/Firearms Prevention Groups
- Youth Programs

Conclusions

- Suicide was the number one cause of injury death in Orange County, accounting for more injury deaths than any other cause during 1997.

- Orange County has reached the *Healthy People 2000* objectives for reduction of total suicides, as well as the objectives for two target populations : adolescents 15-19 and males 20-34. Orange County is still behind the *Healthy People 2000* target rate for white males 65 and older. Orange County has not met the *Healthy People 2010* target rate for total suicides yet.

- Two groups merit targeting for suicide prevention efforts in Orange County:

    - 20-24 year olds- When suicide is compared to all other causes of death, it emerged as a greater cause of death for the 20-24 year old population than for all other age groups. In addition, suicide was the third leading cause of all deaths in this age group, higher than any other group.

    - White males 75 and older- With the exception of 1996, between 1990 and 1997, white males in the 75 and older age group exhibited the highest rate of suicide death of all people in Orange County.

- Suicide risk factors can be classified as psychological, sociocultural/environmental, and situational. Major depression and substance abuse are consistently correlated with suicide across all populations. Protective factors do provide a buffer between an individual affected by suicide risk factors and actual suicidal behavior. Research suggests that understanding protective factors helps explain why only certain people commit suicide.

- Effective programs for suicide prevention should target both risk and protective factors. Moreover, suicide prevention programs that focus on treatment for the strongest risk factors – mental illness and substance abuse – could have a great impact on suicide death (National Institute of Mental Health, 1999).

- Initial assessment of community resources indicates that there are many programs in Orange County that address the problem of suicide by working with predisposing protective and risk factors.

- There are programs in Orange County that directly and indirectly address suicide and its risk and protective factors. Those prevention programs that indirectly address risk and protective factors help reduce the chance that a vulnerable person will choose suicide as a method of coping.

Notes

Data Information:

- The data in this report is from County of Orange, Health Care Agency Death Files and from The Center for Demographic Research, California State University, Fullerton
- Raw data can be obtained by contacting the Chronic Disease and Injury Prevention (CDIP) Program at: (714) 834-3059.
- Throughout this paper, death rates were calculated only if the numerator was 5 or greater.
- For comparison with California death rates, United States death rates, and the *Healthy People 2000* goal rates for suicide, age-adjusted rates were calculated using the 1940 United States population as the standard population.

Community Resources:

- A list of Orange County resources that address suicide prevention and suicide risk and protective factors can be obtained by contacting the Chronic Disease and Injury Prevention (CDIP) Program at: (714) 834-3059.

Sources:

- A list of articles on suicide, some of which include a deeper discussion of suicide risk and protective factors, can be obtained by contacting the Chronic Disease and Injury Prevention (CDIP) Program at: (714) 834-3059.

Definitions

Crude Death Rate – An estimate of the proportion of a population that dies during a specified period. The numerator is the number of persons dying during that period; the denominator is the size of the population, usually estimated as the mid-year population. Death rate calculations were only performed if the numerator was equal to 5 or greater (e.g., there were 5 or more deaths in each injury category).

Person-year – "Person-year" is used for analysis of a 3-year grouping. Because we are observing suicide deaths over a three year time period, each Orange County resident is observed for three years . Each person only contributes as many years of observation to the population at risk as he is actually observed; if he leaves after one year, he contributes one person-year; if after ten, ten person-years . The denominator is not the number of people observed, but the number of years they contribute to the denominator. By contrast, the term "population" is also used to represent a denominator population, when the data described is for only one year.

Age-adjustment – A procedure for standardizing rates, e.g. death rates, designed to minimize the effects of differences in age composition when comparing rates for different populations.

***Healthy People 2000* –** A series of national health objectives established by the U.S. Department of Health and Human Services, released in 1990.
Website: http://odphp.osophs.dhhs.gov/pubs/hp2000 .

References

Blumenthal, S. J. (1988). Suicide: a guide to risk factors, assessment, and treatment of suicidal patients. Medical Clinics of North America, 72 (4), 937-971.

Canetto, S. S., Gender and suicide in the elderly . (1992). Suicide and Life-Threatening Behavior, 22(1), 80-97.

Lester, D. (1993). The effectiveness of suicide prevention centers. Suicide and Life-Threatening Behavior, 23(3), 263-267.

Mental Health Unit, Health Care and Issues Division, Health Canada . (1997, March). Investigating the Economic Burden of Suicidality: Health Care and Other Costs to Society (unpublished working document). Background materials and summary of the proceedings of a workshop organized by Health Canada in association with The Canadian Association for Suicide Prevention.

National Institute for Mental Health. (1999). www.nihm.nih.gov/research/suifact.htm.

National Public Services Research Institute, Pacific Institute for Research and Evaluation. (1996). Landover, MD.

U.S. Department of Health and Human Services . (1990). Healthy People 2000: National Health Promotion and Disease Objectives. (DHHS Publication No. (PHS) 91-50212). Washington, DC: U.S. Government Printing Office.

U.S. Public Health Service. The Surgeon General's Call to Action to Prevent Suicide . Washington, DC: 1999.

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